REMARKS:

Applicant submits herewith a petition and fee in the amount of $420.00, for a two-month extension of time pursuant to 37 CFR §1.136. Applicant thanks the examiner for acknowledging his claim for foreign priority.

Claims 1-4 were examined. By this amendment, applicant amended claims 1, 2 and 4. In addition, applicant added new claims 5-14, which are presented for consideration.

The Official action set forth a rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by U. S. patent no. 6,157,160 to Okawa et al. ("Okawa"). Applicant respectfully traverses this rejection. In the foregoing amendments, claim 1 was amended to include the feature of a solenoid "for driving an electromagnetic valve" to more clearly claim the invention. Further, Claim 1 has also been amended to include the feature of a "first" power source, which has been added for purposes of clarification in introducing more than one power source, and not for reasons of patentability. For the following reasons, it is respectfully submitted that claim 1 is patentable over Okawa.

One feature of the present invention is directed to a solenoid for driving an electromagnetic valve. See, for example, the present application at the 1st paragraph of the Summary of the Invention section. Further, according to another feature of the present invention, by locating current detector(s) between solenoids and switch means for an electromagnetic valve, the number of signal lines may be reduced when a plurality of solenoids are used for the electromagnetic valve. See for example, FIG. 3 and page 11, lines 5-15 of the

specification. In addition, according to another feature of the present invention, by locating the switch means and current detectors on the power source side of the solenoids, overcurrent detection or current grounding may be determined. See for example, page 11, lines 16-23 of the specification.

Claim 1 is patentable over Okawa for at least the reason that Okawa fails to teach or suggest each and every limitation of claim 1. The Official action alleged that Okawa discloses each of the features as recited in claim 1. However, applicant respectfully submits that Okawa does not disclose a solenoid for driving an electromagnetic valve. Instead, the teaching of Okawa is directed towards energization control of a switched reluctance motor for rotating the motor in a desired direction. More particularly, Okawa is directed to establishing a target torque and rotation speed of a switched reluctance ("SW") motor with multi-phase coils. See Abstract, Okawa U.S. patent no. 6,157,160. In order to improve efficiency of a SW motor, Okawa teaches "energization on angle, a first energization off angle, a second energization off angle and a target value corresponding to an angle of rotation are determined with respect to each coil on the basis of a target torque and a rotation speed." See Abstract of Okawa. Okawa is therefore, not directed to electromagnetic valves or solenoids for driving an electromagnetic valve as is disclosed in the present application and required in the present claims.

Because of structural and operational differences between a motor solenoid (as proposed in Okawa) and a valve solenoid, the teaching of one cannot be necessarily inferred to the other. There is no suggestion or

motivation in Okawa that what is taught in Okawa can be applied to electromagnetic valves. Okawa does not disclose a solenoid for driving an electromagnetic valve. For at least these reasons, claim 1 is patentable over Okawa because Okawa fails to teach or suggest each and every limitation of claim 1. Therefore, applicant respectfully requests that the examiner withdraw the rejection of claim 1.

Claims 2-3 were rejected under 35 U.S.C. § 103(a) as being obvious over Okawa in view of U.S. patent no. 5,801,504 to Endo et al. ("Endo"). This rejection is respectfully traversed. Claim 2 was amended to include the feature of a "first" power source, which has been added for purposes of clarification in introducing more than one power source, and not for reasons of patentability. Claims 2 and 3 depend from claim 1 and therefore, contain all of the limitations of claim 1 including a solenoid for driving an electromagnetic valve. Okawa in view of Endo does not teach or suggest the applicant's claimed invention. For at least the following reasons, claims 2 and 3 are patentable over Okawa in view of Endo.

As discussed above with respect to the 102(b) rejection, Okawa does not teach or suggest a solenoid driving device including a solenoid for driving an electromagnetic valve. Endo does not make up the deficiencies of Okawa. Endo is directed to a control apparatus for an electric power steering system. Endo does not teach or suggest a solenoid driving device including a solenoid for driving an electromagnetic valve. Instead, like Okawa, the teachings of Endo are directed to a control apparatus for motors (see Endo at, for example,

column 1, line 1 through column 2, line 21, and figures 6, 7, and 9). Endo does not disclose a solenoid for driving an electromagnetic valve, but discloses a rotational motor for assisting in the manual steering operation of a steering system. For at least these reasons, claims 2 and 3 are patentable over Okawa in view of Endo at least by virtue of their dependency on claim 1 and Endo's failure to teach or suggest a solenoid for driving an electromagnetic valve.

Applicant further submits that dependent claims 2 and 3 are not obvious over Okawa in view of Endo because there is no suggestion or motivation for combining Okawa and Endo in the manner necessary to meet the limitations of claims 2 and 3. Even if, for the sake of argument, what the Official action alleged as being taught by Okawa in view of Endo is true, the combination of Okawa and Endo does not suggest or motivate one skill in the art to modify the teachings of Okawa and Endo in a manner required to meet the limitations of claims 2 and 3 so as to include a solenoid for driving an electromagnetic valve, disposing a current detector on the side of a power source with respect to the solenoid, and disposing a switch means and the current detector within a controller, because there are structural and operational differences between electromagnetic valves and motors.

The Official action also stated that it has been held that rearranging parts of an invention involves only routine skill in the art and cited *In re Japiske*. This argument is traversed. The mere fact that someone of routine skill in the art could rearrange the parts of a device to meet the limitations of the claims being examined is not by itself sufficient to support a finding of

obviousness. The prior art must provide motivation or reason why someone of routine skill in the art, without the benefit of applicant's specification, to make the necessary changes to the device in the prior art. *Ex parte Chicago Rawhide Mfg. C.,* 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). In essence, the examiner may not use hindsight reasoning to find the applicant's invention obvious. In this case, the examiner's reasoning for modifying Okawa and/or Endo is not found in the references but based on hindsight reasoning and/or speculation.

Therefore, applicant respectfully submits that based on at least the aforementioned points, Okawa in view of Endo does not render the claimed invention obvious because they do not teach or suggest each and every limitation, particularly as defined in the manner stated by dependent claims 2 and 3.

Claim 4 was rejected under 35 U.S.C. § 103(a) as being obvious over Okawa in view of U.S. patent no. 5,801,504 to Endo et al. ("Endo"). Applicant respectfully traverses this rejection. Claim 4 was amended to include the features "an electromagnetic valve including a solenoid" and "said current detector includes overcurrent detection." Okawa in view of Endo does not teach or suggest the invention of the present application as recited in claim 4. For at least the following reasons, claim 4 is patentable over Okawa in view of Endo.

As discussed above, the teachings of Okawa and Endo are not directed to solenoids for electromagnetic valves. Further, neither Okawa nor Endo, taken

alone or in combination, teach or suggest a current detector that includes overcurrent detection. Neither Okawa nor Endo disclose the use of overcurrent detection. In Okawa and Endo the current detectors are direct to controlling the current and voltage to a motor during normal operation, not during an overcurrent detection. For at least these reasons, claim 4 is patentable over Okawa in view of Endo.

The Official action alleged that "[I]t would have been obvious to one of ordinary skill in the art at the time the invention was made to include the current detector as part of the controller because it would provide convenience for having a single unit in which all parts are mounted and being able to provide sensing through the terminal." *See* page 3, lines 16-19, of the Official action. Applicant respectfully disagrees with this assessment. Although in certain situations there may be a desirability to integrate each component into a single unit, there are many situations whereby it is desirable to locate a sensing device remotely from the controlling or monitoring unit. For example, in this case, the sensing device is a current detector used to determine the current flowing through a solenoid. As such, for various operational reasons it may be preferable for the current detector to be located as close to the solenoid as possible and remotely from the controller. Applicant respectfully submits that, in this case, the examiner used impermissible hindsight reasoning to modify and combine the references in a manner required to meet the limitations of the claims. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). There is no suggestion or motivation in either Okawa or Endo for

combining these references in the manner required to meet each and every limitation of claim 4.

As for *In re Japiske*, this rationale for finding obviousness of claim 4 is traversed for the same reasons given above with respect to claims 2 and 3. The examiner may not use applicant's own disclosure for finding reason to rearrange parts of a device in the prior art so as to render the invention obvious.

Therefore, applicant respectfully submits that based on at least the aforementioned points, Okawa in view of Endo, does not render the claimed invention obvious because they do not teach or suggest each and every limitation defined in the manner required by dependent claim 4.

Applicant added new claims 5-14 to more completely claim the invention of the subject application. Claims 5-9 are dependent on claim 1, either directly or indirectly, and are therefore patentable for at least the aforementioned reasons given for claim 1. These claims are also patentable over Okawa and Endo because of the additional limitations they contain are not found in Okawa and/or Endo. Claim 5 includes an electromagnetic proportion control valve and overcurrent detection that are not found in Okawa and/or Endo. Claim 6 includes a second power source driving the current detector and is not found in Okawa and/or Endo. Claim 7 includes a second power source that is a direct current power source and is not found in Okawa and/or Endo. Claim 8 includes a second power source including an electrical energy storage component that is not found in Okawa and/or Endo. Claim 9 includes a

current detector that includes a voltage/current converter that is not found in Okawa and/or Endo. Therefore, claims 5-9 are patentable over both Okawa and/or Endo for at least these reasons.

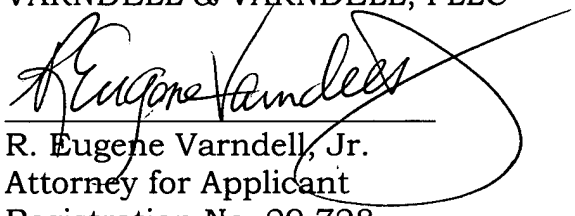
New claims 10-14 are directed to an electromagnetic valve activation system including a plurality N of solenoids wherein the controller is coupled to the plurality N of solenoids with N+1 signal lines. Neither Okawa nor Endo teach or suggest such an arrangement of signal lines coupled to solenoids. Further, claims 11-14 contain additional limitations not disclosed by Okawa and/or Endo. Therefore, based on at least the aforementioned, applicant respectfully submits that new claims 10-14 are patentable over Okawa and/or Endo.

Based on the foregoing amendments and remarks, favorable consideration and allowance of claims 1-14 are respectfully requested.

While it is believed that the foregoing is a complete and proper response to the Official action mailed July 11, 2003, in the event the examiner has any comments or questions, it is respectfully requested that the undersigned be telephoned at the below listed number to resolve any outstanding issues.

In the event this paper is not timely filed, applicant hereby petitions for an appropriate extension of time. The fee therefore, as well as any other fees which become due, may be charged or credited to our deposit account No. 22-0256.

Respectfully submitted,
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